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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/980,873	12/06/2001	Toshiaki Fukunaka	04208.0128	1403

7590

07/31/2003

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EXAMINER

WILSON, SCOTT R

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 07/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/980,873

Applicant(s)

FUKUNAKA, TOSHIAKI

Examiner

Scott R. Wilson

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 10-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-7 is/are rejected.
- 7) ☒ Claim(s) 4, 8 and 9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

  
NATHAN J. FLYNN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other:

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**DETAILED ACTION*****Election/Restrictions***

Applicant's election of claims 1-9 in Paper No. 6 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukunaka et al. in view of Hattori et al. and further in view of IBM. Fukunaka et al., Figure 1, discloses a magnetoelectric transducer comprising a magnetosensitive section (3) and internal electrodes (2) formed on an upper surface of an insulating substrate (1). Fukunaka et al. does not disclose expressly conductive layers formed on the side surfaces of the transducer, nor does it disclose the conductive layers formed of a sintered compact which includes a high melting-point metal with a given percentage composition. Hattori et al., Figure 2, discloses a magnetic sensor element with a magnetosensitive section (2), internal electrodes (3), and conductive layers (7) formed on the side surfaces thereof. IBM (Page 2, lines 9-14) discloses a conductive sintered compact which includes a metal with melting point greater than 1600 °C with a percentage by weight of 97%, which would be known in the art to be reducible to about 90%. IBM further discloses (page 4, lines 33-37) layers of alumina which may be sintered to form an insulating substrate. At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the side conductors of Hattori et al. with the magnetoelectric transducer of Fukunaka et al., to form said

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conductors and insulator according to the method of IBM. The motivation for doing so would have been to form a magnetoelectric transducer with the enhanced thermal properties of the sintered conductive and insulating components (IBM, page 2, lines 1-8). Therefore, it would have been obvious to combine Hattori et al. with Fukunaka et al., and IBM to obtain the invention as specified in claim 1.

As to claim 2, the high melting-point metal in the conductive sintered compact is molybdenum, and the sintered insulating layer is composed of alumina.

As to claim 3, Hattori et al. discloses an adhesive resin layer (6) formed on an upper surface of the insulating substrate (4), with the magnetosensitive layer (2) and internal electrodes (3) formed thereon.

Claims 5, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukunaka et al. in view of Hattori et al. further in view of IBM, and further in view of Partin et al.. Fukunaka et al. in view of Hattori et al. further in view of IBM discloses the invention of claim 1, as described above. Fukunaka et al. in view of Hattori et al. further in view of IBM does not disclose expressly InSb thin films formed on an inorganic layer with a given electron mobility. Partin et al. discloses (col. 4, lines 37-43) (col. 5, lines 53-55) an InSb film with electron mobility ranging from 10,000 to 32,000  $\text{cm}^2/\text{V}/\text{sec}$  formed on an inorganic insulating substrate, which, as is well-known in the art, may comprise silica, alumina, or glass. At the time of invention, it would have been obvious to a person of ordinary skill in the art to form the InSb films of Partin et al. on an inorganic layer. The motivation for doing so would have been to maximize the magnetic sensitivity of the magnetoelectric transducer (Partin et al., col. 1, line 51). Therefore, it would have been obvious to combine Hattori et al. with Fukunaka et al., IBM and Partin et al. to obtain the invention as specified in claims 5, 6 and 7.

#### ***Allowable Subject Matter***

Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In both Hattori et al. and Fukunaka et al., the sintered conductive layer and the internal electrodes are formed in contact with each other.

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Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. No prior art discloses a metal coat formed on a surface of the sintered conductive layer.

Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. No prior art discloses a strain buffering layer formed on the magnetosensitive section.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott R. Wilson whose telephone number is 703-308-6557. The examiner can normally be reached on M-F 8:30 - 4:30 Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 703-308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

srw  
June 27, 2003